

Report for 2001MS2381B: Screening of Environmental Contaminants Detected in Mississippi Sediments as Inducers and/or Inhibitors of CYP1B1 Expression in Channel Catfish

There are no reported publications resulting from this project.

Report Follows:

PROBLEM AND RESEARCH OBJECTIVES:

This project is specifically aimed at characterizing the utility of a recently discovered cytochrome, CYP1B1, as a marker of exposure to contaminants that have been reported by the USGS NAWQA and BEST programs in Mississippi sediments and fish samples. Because channel catfish (*Ictalurus punctatus*) are such an abundant and economically significant species in Mississippi, they are being used as the test organism in these studies.

METHODS, PROCEDURES, AND FACILITIES:

We received our funding award on May 8, 2001 so our first quarter results have been somewhat limited. Thus far, however, we have conducted one sampling trip. We collected sediments at the following six locations:

- Site 1) Cassidy Bayou, Sumner, MS
- Site 2) Sunflower River, Indianola, MS
- Site 3) Lake Roebuck, Itta Bena, MS
- Site 4) Yazoo River, Greenwood, MS
- Site 5) Bee Lake, Thornton, MS
- Site 6) Wolf Lake, Yazoo City, MS

These samples are currently being extracted and analyzed for polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs) and organochlorine pesticides including DDTs. Based on the analytical results from these samples, we will narrow our collection sites to the 4-5 most contaminated, and collect catfish at those sites. Our first catfish collection trip is scheduled for June 9, 2001. We will attempt to collect five male fish at each location. Samples will be collected for enzyme and RNA assays and analytical contaminant measurements. The results of the field-collected catfish will be compared to farm-raised catfish (Stuttgart, AR) that we maintain at the University of Mississippi Biological Field Station.

SIGNIFICANCE:

These results aim to characterize utility of CYP1B1 as a biomarker of exposure to environmental contaminants in channel catfish collected from Mississippi lakes and rivers. As mentioned, we will compare the results from laboratory animals to those collected from Mississippi waterways. We are still conducting RACE procedures to clone the entire CYP1B gene from catfish. Future experiments will also screen other environmental contaminants such as PCB or DDT isomers for their effects on CYP1B1. These results have been submitted in abstract form for presentation at both the PRIMO (Pollutant Responses in Marine Organisms) and SETAC (Society of Environmental Toxicology and Chemistry) meetings.